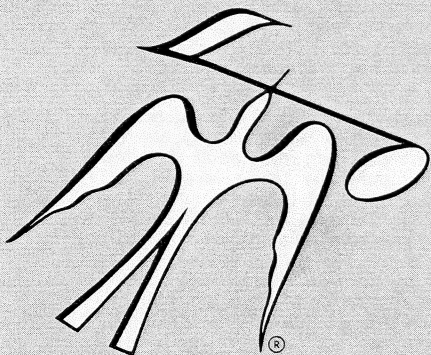
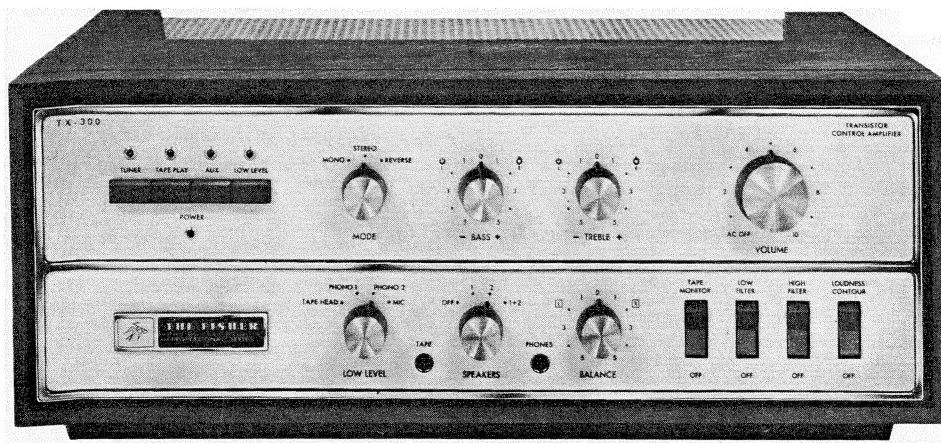


Serial Nos. Beginning 10000

Service Manual

THE FISHER[®]



TX-300

CHASSIS SERIAL NUMBERS
BEGINNING 10000

\$1.00

FISHER RADIO CORPORATION • LONG ISLAND CITY 1 • NEW YORK

CAUTION: This is a FISHER precision high-fidelity instrument. It should be serviced only by qualified personnel — trained in the repair of transistor equipment and printed circuitry.

EQUIPMENT AND TOOLS NEEDED

The following are needed to completely test and align this high-fidelity instrument.

Test Instruments

Vacuum-Tube Voltohmmeter DC VTVM
Audio (AC) Vacuum-Tube Voltmeter (AC VTVM)
Oscilloscope (Flat to 100 kc minimum)
Audio (Sine-wave) Generator
Intermodulation Analyzer

Miscellaneous

Adjustable-Line-Voltage Transformer or line-voltage regulator
Load Resistors (2) — 8-ohm, 50-watt (or higher)
Stereo source (Turntable with stereo cartridge or Tape Deck)
Speakers (2) Full-range, for listening tests
Soldering iron (with small-diameter tip).
Fully insulated from power line.

PRECAUTIONS

Many of the items below are included just as a reminder — they are normal procedures for experienced technicians. Shortcuts can be taken but often they cause additional damage — to transistors, circuit components or the printed-circuit board.

Soldering—A well-tinned, hot, clean soldering iron tip will make it easier to solder without damage to the printed-circuit board or the many many circuit components mounted on it. It is not the wattage of the iron that counts — it is the heat available at the tip. Low-wattage soldering irons will often take too long to heat a connection — pigtail leads will get too hot and damage the part. Too much heat, applied too long, will damage the printed-circuit board. Some 50-watt irons reach temperatures of 1,000° F — others will hardly melt solder. Small-diameter tips should be used for single solder connections — larger pyramid and chisel tips are needed for larger areas.

- When removing defective resistors, capacitors, etc., the leads should be cut as close to the body of the circuit component as possible. (If the part is not being returned for in-warranty factory replacement it may be cut in half — with diagonal-cutting pliers — to make removal easier.)
- Special de-soldering tipleths are made for unsoldering multiple-terminal units like IF transformers and electrolytic capacitors. By unsoldering all terminals at the same time the part can be removed with little chance of breaking the printed-circuit board.
- Always disconnect the chassis from the power line when soldering. Turning the power switch OFF is not enough. Power-line leakage paths, through the heating element, can destroy transistors.

Transistors—Never attempt to do any work on the transistor amplifiers without first disconnecting the AC-power linecord — wait until the power supply filter-capacitors have discharged.

- Guard against shorts — it takes only an instant for a base-to-collector short to destroy that transistor and possibly others direct-coupled to it. [In the time it takes for a dropped machine screw, washer or even the screwdriver, to glance off a pair of socket terminals (or between a terminal and the chassis) a transistor can be ruined.]
- DO NOT bias the base of any transistor to, or near, the same voltage applied to its collector.
- DO NOT use an ohmmeter for testing transistors. The voltage applied through the test probes may be higher than the base-emitter breakdown voltage of the transistor.

Output Stage and Driver—Replacements for output and driver transistors, if necessary, must be made from the same beta group as the original type. The beta group is indicated by a colored dot on the mounting flange of the transistor. Be sure to include this information, when ordering replacement transistors.

- If one output transistor burns out (open or shorts), always remove all output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All output transistors in one channel will be destroyed if the base-biasing circuit is open on the emitter end.

- When mounting a replacement power transistor be sure the bottom of the flange, the mica insulator and the surface of the heat sink are free of foreign matter. Dust and grit can prevent perfect contact. This reduces heat transfer to the heat sink. Metallic particles can puncture the insulator and cause shorts — ruining the transistor.

- Silicone grease must be used between the transistor and the mica insulator and between the mica and the heat sink for best heat conduction. Heat is the greatest enemy of electronic equipment. It can shorten the life of transistors, capacitors and resistors. (Use Dow-Corning DC-3 or C20194 or equivalent compounds made for power transistor heat conduction.)

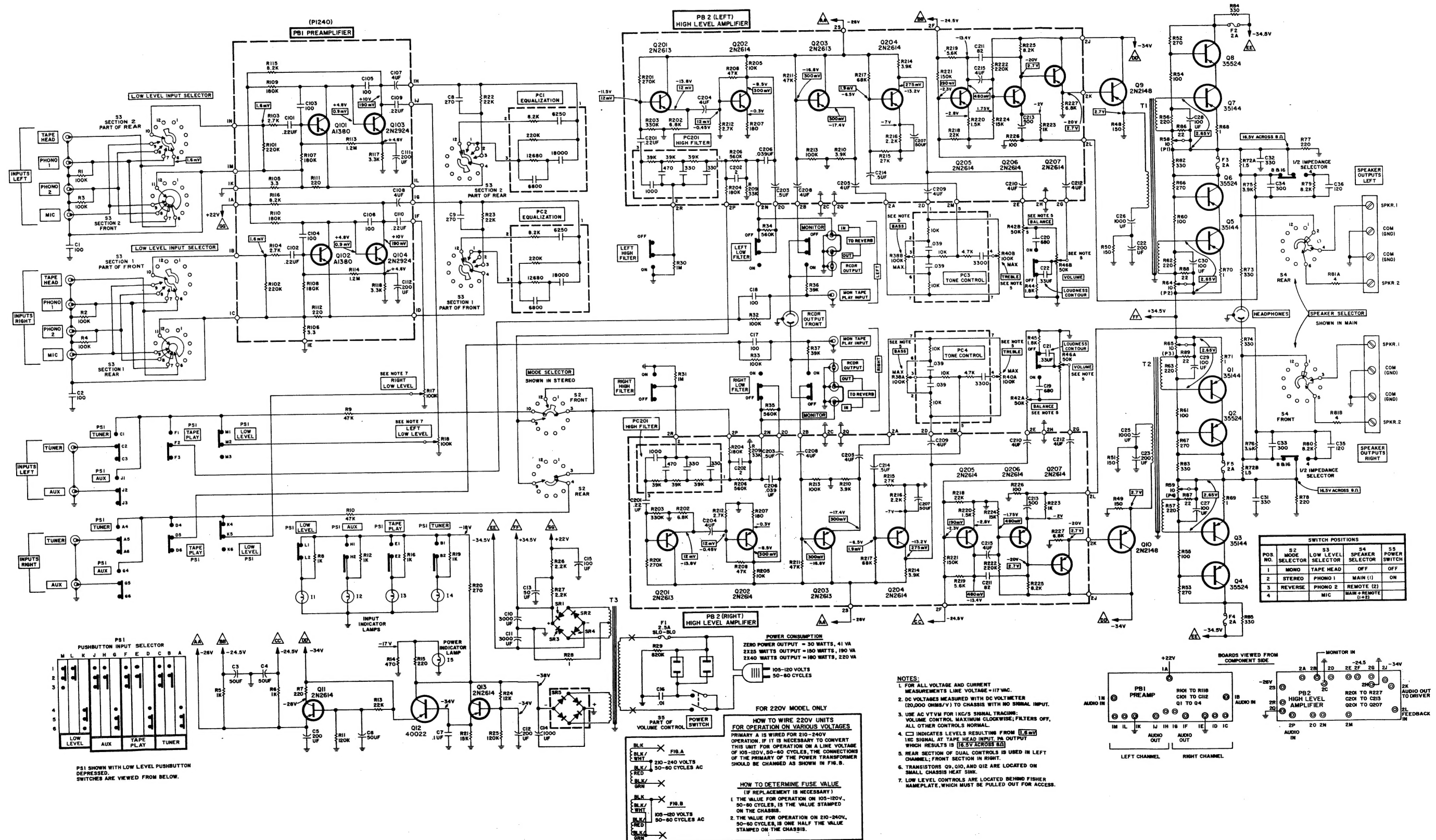
- Use care when making connections to speakers and output terminals. Any frayed wire ends can cause shorts that may burn out the output transistors — they are direct-coupled to the speakers. There is no output transformer — nothing to limit current through the transistors except the fuses. To reduce the possibility of shorts at the speakers, lugs should be used on the exposed ends — at least the ends of the stranded wires should be tinned to prevent frayed wire ends. The current in the speakers and output circuitry is quite high. Any poor contact or small-size wire, can cause power losses in the speaker system. Use 14 or 16 AWG for long runs of speaker-connecting wiring.

DC-Voltage Measurements—These basic tests of the transistor circuitry are made without the signal generator. Without any signal input measure the circuit voltages — as indicated on the schematic. The voltage difference between the base and the emitter should be in the millivolt range — a sensitive DC meter is needed for these readings. A low-voltage range of 1 volt, full scale — or lower — is needed.

Audio-Voltage (gain) Measurements—The schematic and printed-circuit board layout diagrams are used. Input signals are injected at the proper points — found most quickly by using layout of the printed-circuit board instead of the schematic. An AUDIO (AC) VTVM connected to the test points should indicate voltages close to those values shown in the boxes on the schematic. Many of the signal levels in the input stages are only a few millivolts — they can not be read on the AC ranges supplied on most Vacuum-Tube AC/DC Volt-ohmmeters (VTVMs). Even with a 1-volt range a signal level of 100 millivolts (.1 volt) will be the first 1/10 of the meter scale. A reading of 1 millivolt (.001 volt) will hardly even move the meter needle.

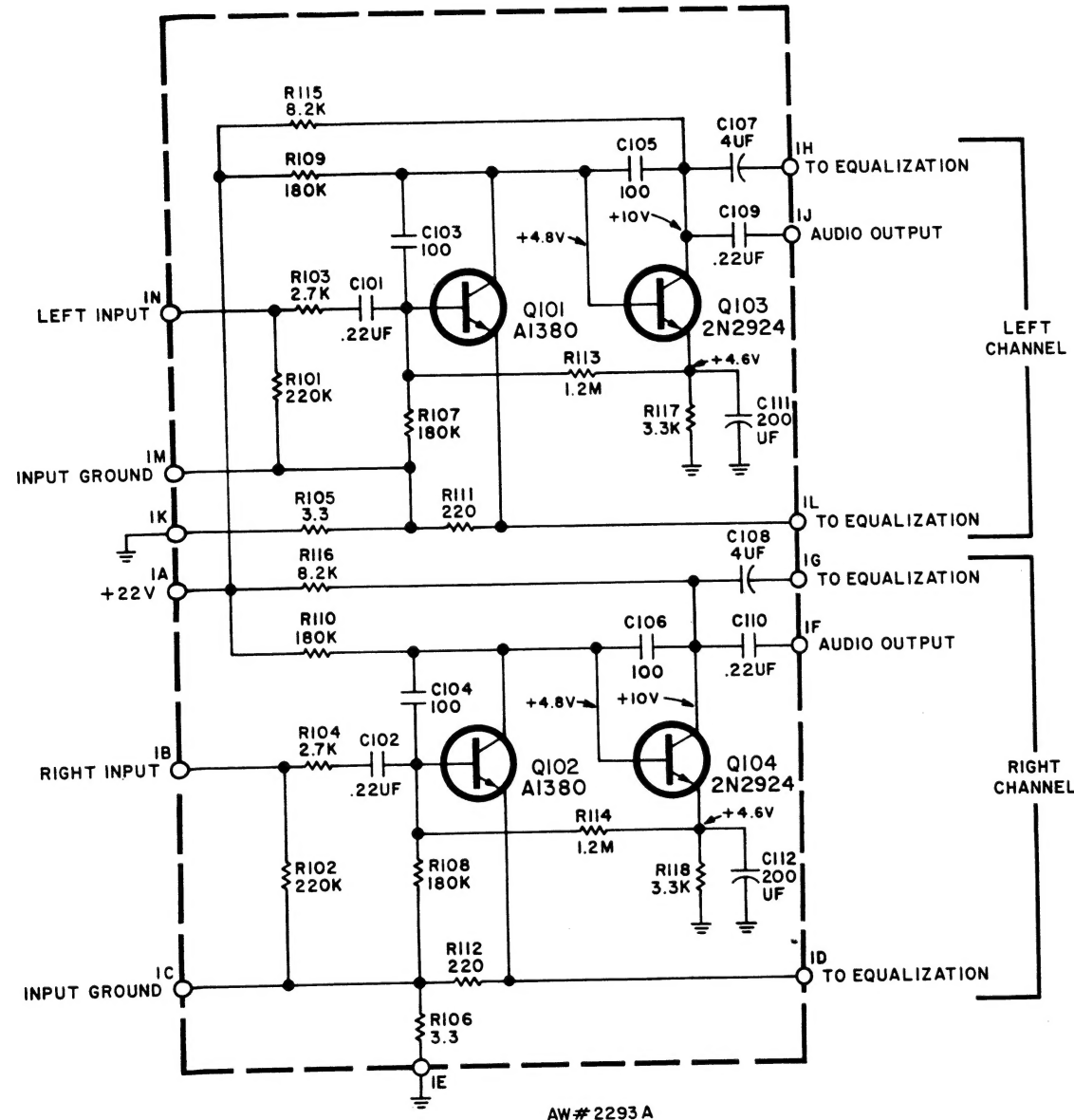
The Fisher TX-300 Transistor Stereo Control-Amplifier

SCHEMATIC DIAGRAM



P1240 PREAMPLIFIER

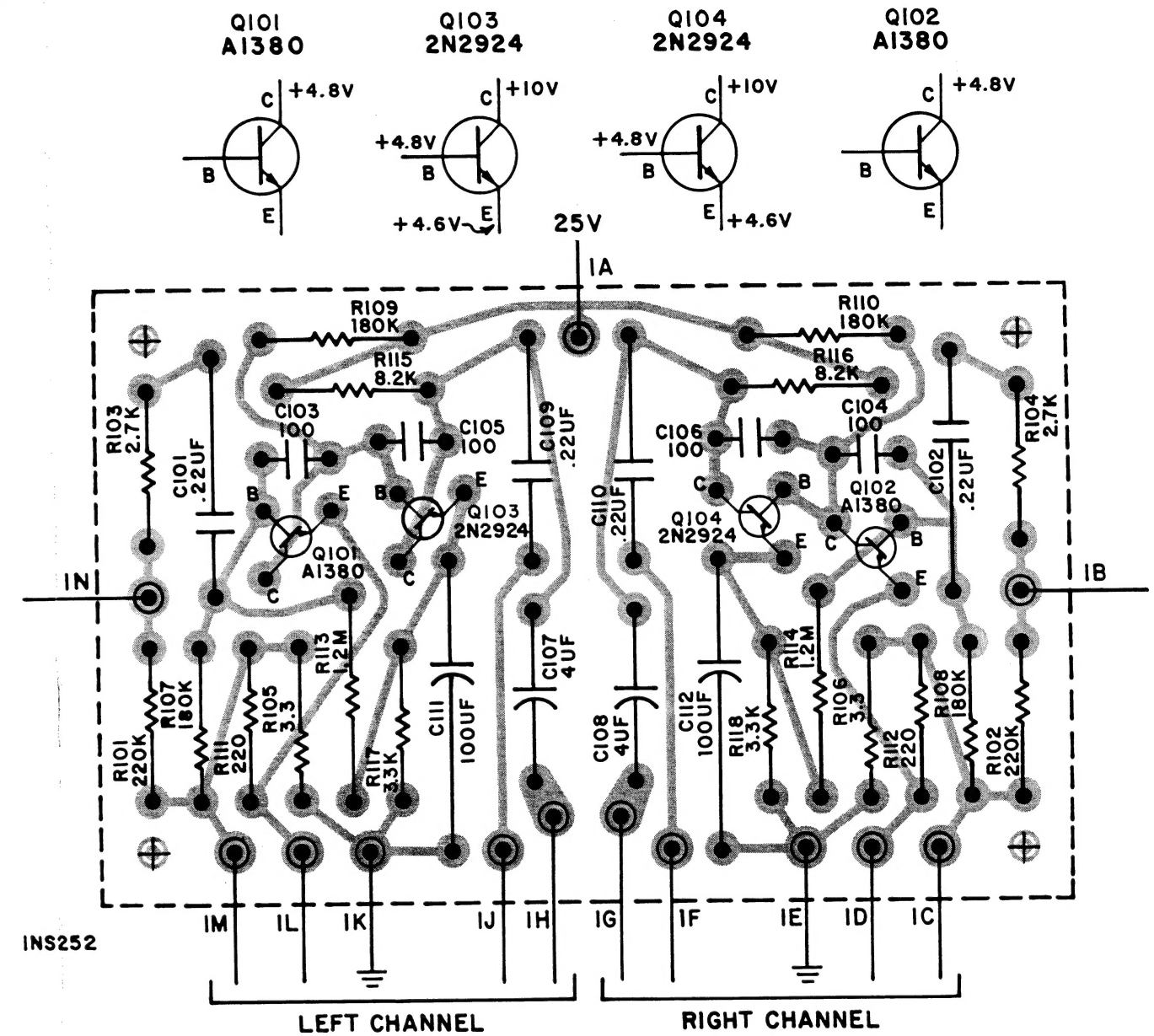
SCHEMATIC DIAGRAM



If replacement parts are out of stock, locally, they may be obtained directly from the Parts Department of FISHER Radio Corporation. They will be shipped "best way", either prepaid or C.O.D. unless otherwise specified.

For instrument-operation information and technical assistance write Richard Hamilton, Customer Service Department, FISHER Radio Corporation, Long Island City, New York 11101.

P 1240 PRINTED-CIRCUIT LAYOUT



PARTS DESCRIPTION LIST

| Symbol | Description | Part No. | Symbol | Description | Part No. |
|--------|----------------|-----------|--------|-----------------------|-----------|
| R101 | Resistor, 220K | R12DC224J | C101 | Capacitor, .22UF/160V | C50B575-3 |
| R102 | Resistor, 220K | R12DC224J | C102 | Capacitor, .22UF/160V | C50B575-3 |
| R103 | Resistor, 2.7K | R12DC272J | C103 | Capacitor, 100/±10% | C50B568-3 |
| R104 | Resistor, 2.7K | R12DC272J | C104 | Capacitor, 100/±10% | C50B568-3 |
| R105 | Resistor, 3.3 | R12DC3R3J | C105 | Capacitor, 100/±10% | C50B568-3 |
| R106 | Resistor, 3.3 | R12DC3R3J | C106 | Capacitor, 100/±10% | C50B568-3 |
| R107 | Resistor, 180K | R12DC184J | C107 | Capacitor, .4UF/35V | C50483-1 |
| R108 | Resistor, 180K | R12DC184J | C108 | Capacitor, .4UF/35V | C50483-1 |
| R109 | Resistor, 180K | R12DC184J | C109 | Capacitor, .22UF/160V | C50575-3 |
| R110 | Resistor, 180K | R12DC184J | C110 | Capacitor, .22UF/160V | C50575-3 |
| R111 | Resistor, 220 | R12DC221J | C111 | Capacitor, .100UF/15V | C50483-5 |
| R112 | Resistor, 220 | R12DC221J | C112 | Capacitor, .100UF/15V | C50483-5 |
| R113 | Resistor, 1.2M | R33DC125J | Q101 | Transistor | A1380 |
| R114 | Resistor, 1.2M | R33DC125J | Q102 | Transistor | A1380 |
| R115 | Resistor, 8.2K | R12DC822J | Q103 | Transistor | 2N2924 |
| R116 | Resistor, 8.2K | R12DC822J | Q104 | Transistor | 2N2924 |
| R117 | Resistor, 3.3K | R12DC332J | — | Transistor Spacer | E50A624 |
| R118 | Resistor, 3.3K | R12DC332J | — | Printed Circuit Board | PB1240 |

Control Positions for Tests

1—Unplug unit from AC-power line.

2—Set Balance, Bass and Treble controls to their center positions.

With the MONITOR "on" set Speaker selector to MAIN or position 1. Hi-Filter and Low-Filter switches out. Selector switch to AUX. Mono switch in the out position. The impedance selector (on the rear apron of chassis) is to be set to the 8-16 ohms position.

Output Stage Balancing and IM Distortion Measurements

1—Connect an 8-ohm, 50-watt resistor across the left output terminals. In parallel to the load resistor connect the input leads of an IM (Inter-Modulation) distortion analyzer and the leads of a DC VTVM capable of reading 0.1 volt with accuracy.

2—Connect IM-analyzer generator output to the left Monitor input.

3—Apply AC power and rotate Volume control to its maximum clockwise position—full volume.

4—Increase signal input to amplifier for 20 watts output. (12.5 VAC across 8-ohm load resistor). After one full minute of warm-up time proceed to next step. *The warm-up time is very important (to get proper balance) — the characteristics of the transistors change slightly as their internal temperature rises. A longer warm-up time will not damage the transistors. Once they are warm the tests and adjustments should be completed without delay—before they can cool off.*

5—Reduce IM-analyzer generator output for 5 watts output from amplifier (5.16 VAC across load).

6—Adjust P1 and P2 (P3 and P4 for right channel) for minimum IM distortion and zero DC voltage across the load. (IM distortion should be less than 0.8% and DC voltage lower than ± 0.1 volts across the 8-ohm load. Use two screwdrivers to adjust the controls—it's faster than shifting from one control to the other.)

7—Increase signal input for 40 watts output from amplifier. IM reading should be less than 1%—DC across load should be less than ± 0.3 volt.

REPEAT steps 1 through 7 (above) for right-channel tests.

NOTE—If any of the above instructions are different from those supplied with the IM analyzer instruction manual, it is best to follow those in the manual. If a load resistor of 50-watts rating is built into the IM analyzer, a separate load resistor is not required for the channel under test—one should be wired across the other channel as a precaution. For best results the IM range switch should be set to give a reading in the center to full-scale portion of the meter scale—this gives greater accuracy.

Harmonic Distortion Test

1—Set amplifier controls to positions indicated above (control positions) but with MONITOR "off."

2—Connect an audio (sine-wave) generator to the left AUX input. Connect the harmonic-distortion analyzer to the left speaker #1 terminals across an 8-ohm, 50-watt resistive load.

3—Apply AC power—rotate Volume control to its maximum clockwise position.

4—Set the frequency control of the audio generator to 20 cycles. Adjust the output level for 40 watts (17.9 VAC) across the 8-ohm load. Harmonic distortion should be less than 1%.

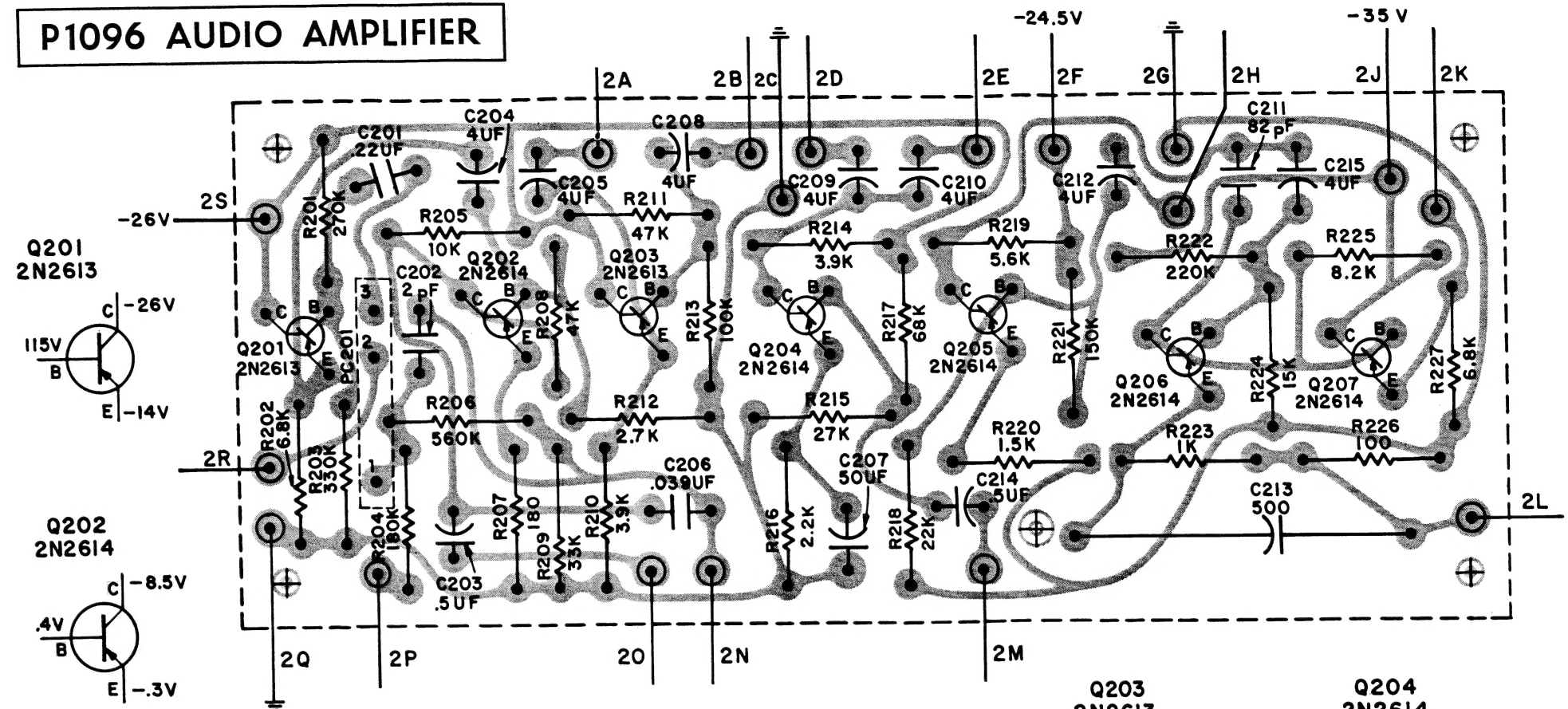
REPEAT steps above for right-channel harmonic-distortion measurements.

Stability Test

1—Connect audio (sine-wave) generator to the left AUX input. Across the left-speaker terminals connect an 8-ohm, 50-watt load resistor and the vertical-input leads of an oscilloscope.

2—Set amplifier controls to positions listed above (control positions).

P1096 AUDIO AMPLIFIER



3—Apply AC power—rotate Volume control to its maximum clockwise position—full volume.

4—Set the frequency control of the audio generator to 20 cycles. Increase the output level of the audio generator until the sine waves, as viewed on the scope, start to distort—the peaks are clipped from overdriving the amplifier. Check waveforms on scope for instability—changes in wave shape or oscillation (thicker line at a portion of the waveform).

5—Repeat the above steps using a 0.1-uf capacitor as a load. Remove the 8-ohm resistor.

REPEAT steps 1 through 5, above, for the right stereo channel.

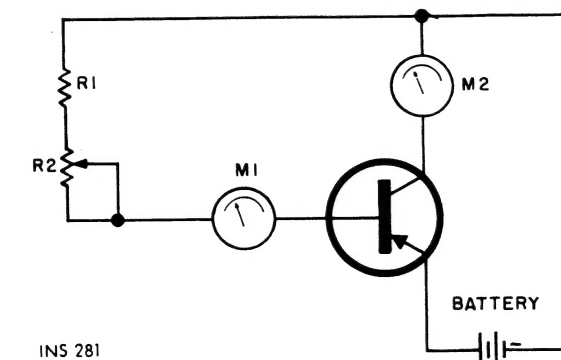
Transistor Testing

If a power-transistor tester is not available the circuit given below can be used to determine the DC beta of the transistors. This is not a complete test of the transistor.

OPERATION: Connect the transistor to the test circuit. Adjust R2 for a 0.5-ampere reading on M2 in the collector circuit. The DC beta is then calculated by:

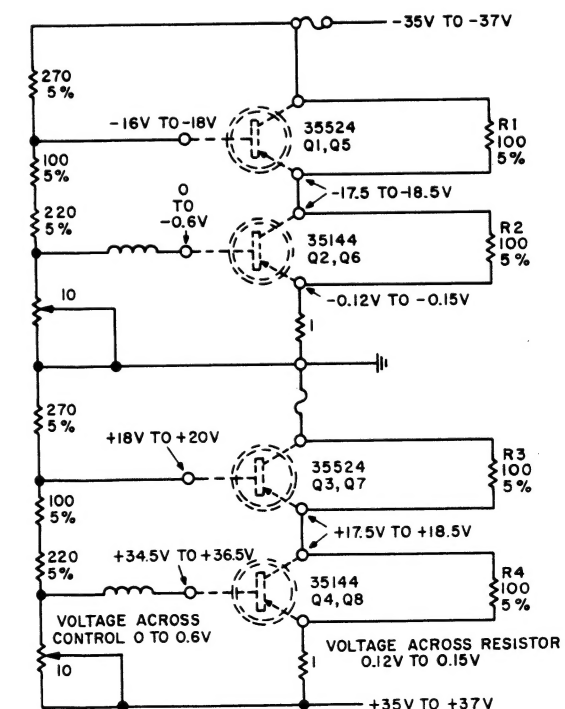
$$\text{DC beta} = \frac{\text{reading of M2}}{\text{reading of M1}}$$

The DC beta should be between 50 and 250.



INS 281

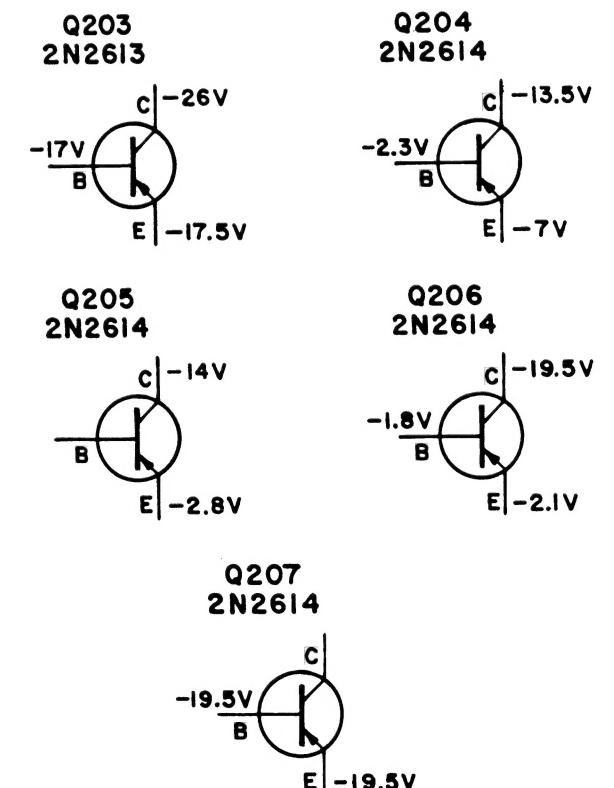
Voltage tests can be made with safety — without ruining transistors — by substituting resistors for the emitter-collector circuit of the power transistors. Voltages and resistor values are given



NOTES:

1. VALUES MEASURED WITH DCVTVM TO GROUND, UNLESS OTHERWISE SPECIFIED.

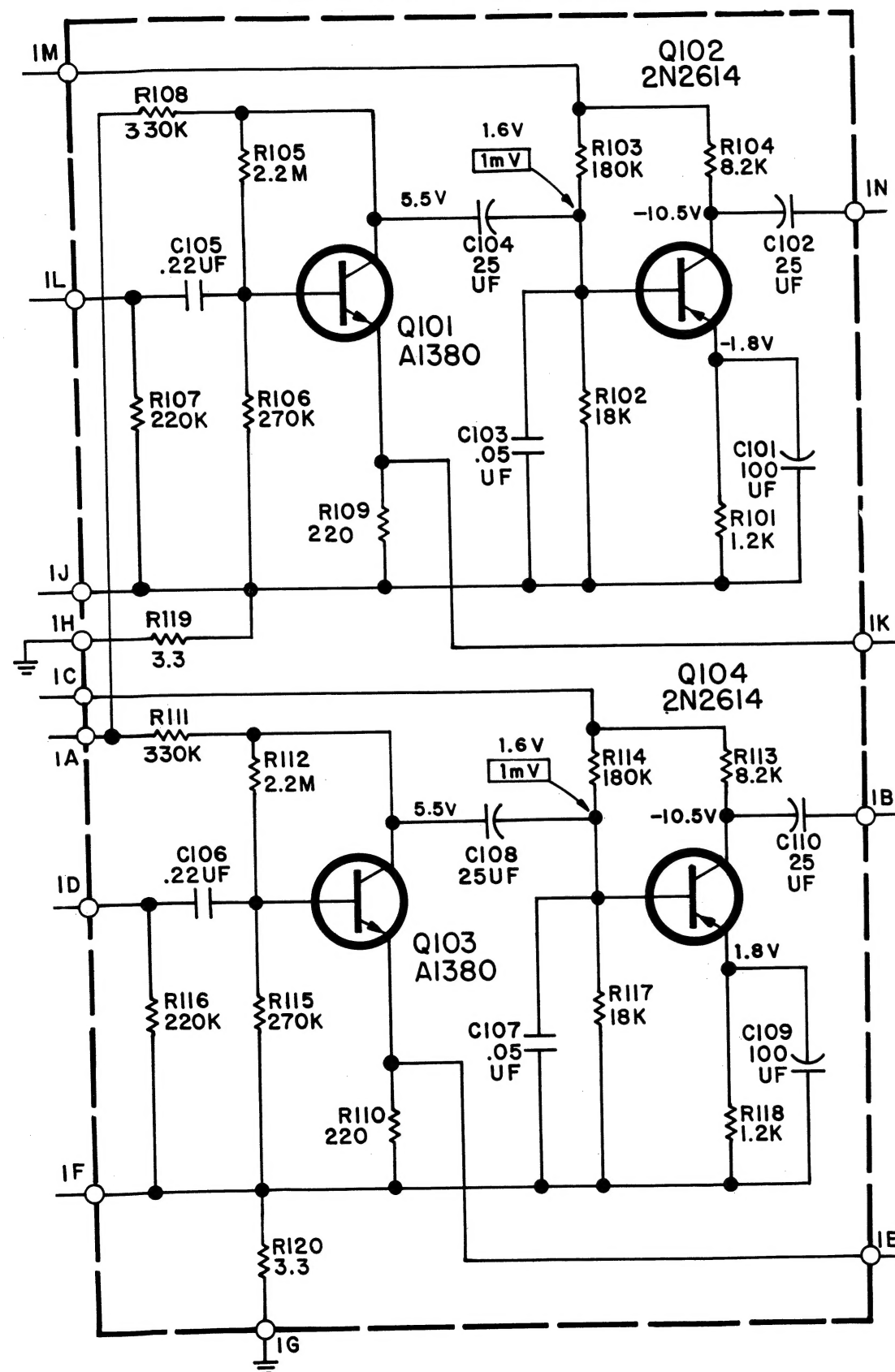
INS 284



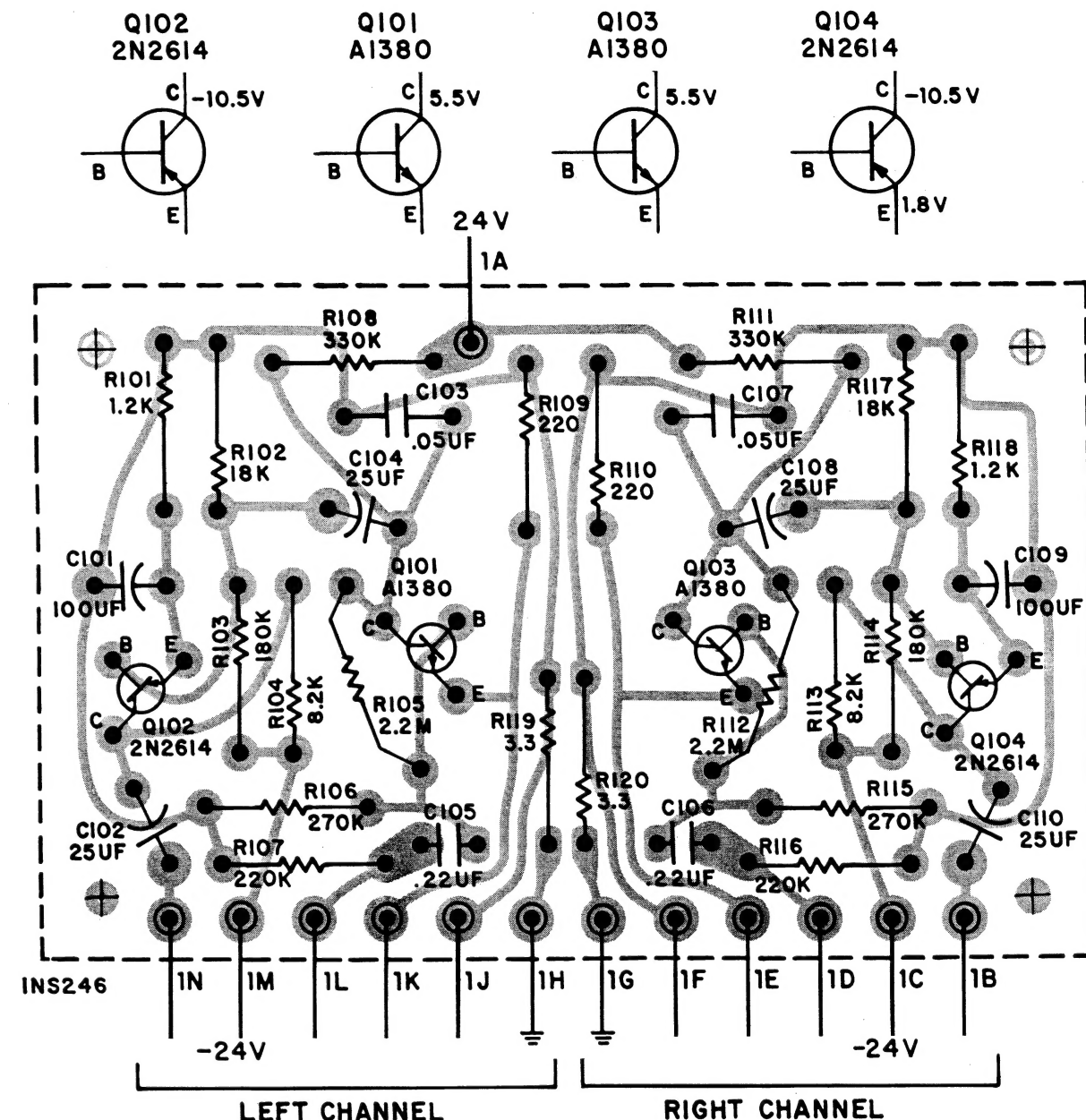
Output Stage and Driver—Replacements for output and driver transistors, if necessary, must be made from the same beta group as the original type. The beta group is indicated by a colored dot on the mounting flange of the transistor. Be sure to include this information, when ordering replacement transistors.

P1095 PREAMPLIFIER

SCHEMATIC DIAGRAM



P 1095 PRINTED-CIRCUIT LAYOUT

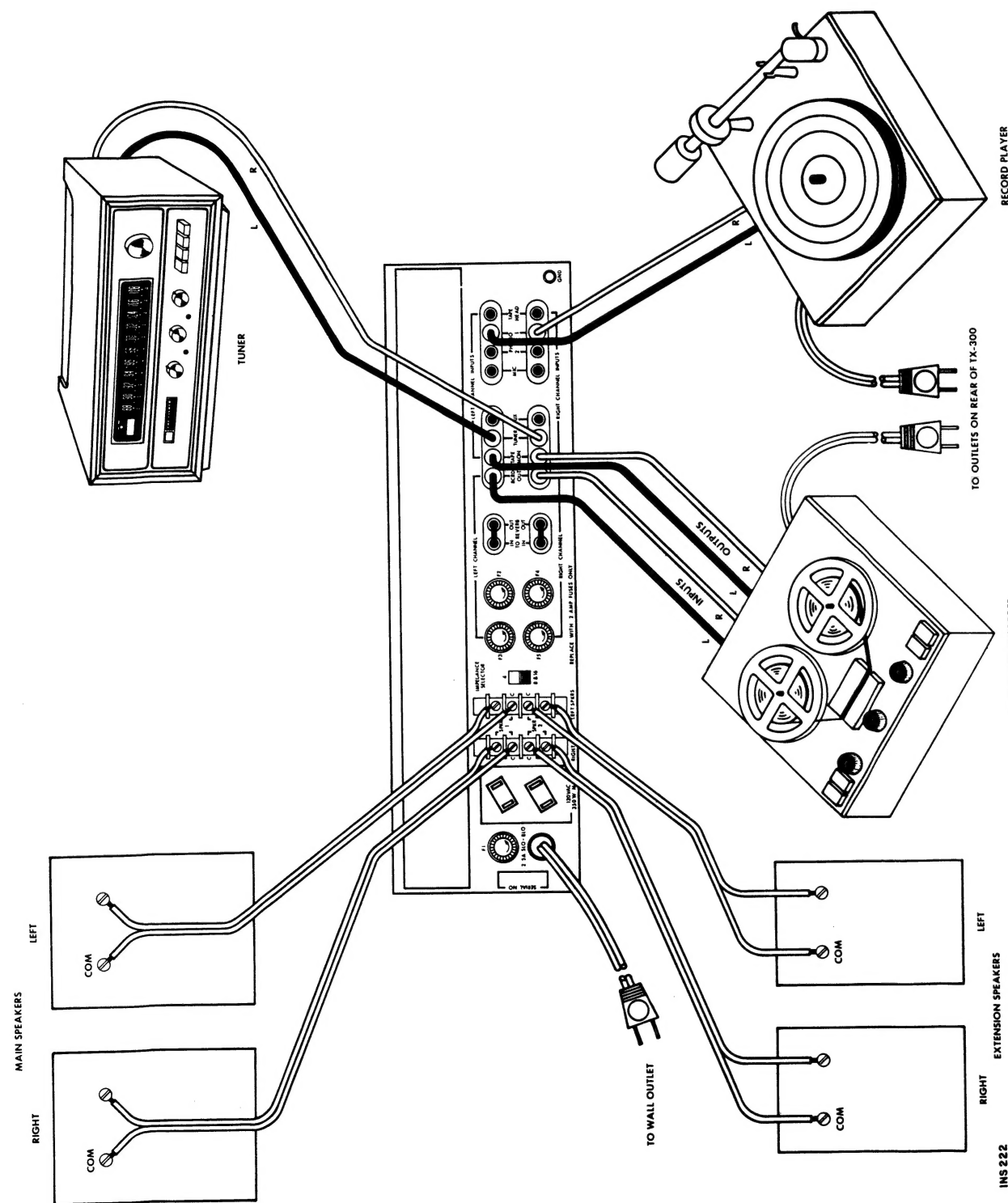


PARTS DESCRIPTION LIST

| Symbol | Description | Part No. | Symbol | Description | Part No. |
|--------|----------------|-----------|--------|------------------------|------------|
| R101 | Resistor, 1.2K | R12DC122J | R119 | Resistor, 3.3 | R12DC3R3J |
| R102 | Resistor, 18K | R12DC183J | R120 | Resistor, 3.3 | R12DC3R3J |
| R103 | Resistor, 180K | R12DC184J | C101 | Capacitor*, 100UF/15V | C50483-5 |
| R104 | Resistor, 8.2K | R12DC822J | C102 | Capacitor*, 25UF/70V | C50483-13 |
| R105 | Resistor, 2.2M | R33DC225J | C103 | Capacitor*, .05UF/100V | C50B572-1 |
| R106 | Resistor, 270K | R12DC274J | C104 | Capacitor*, 25UF/35V | C50483-12 |
| R107 | Resistor, 220K | R12DC224J | C105 | Capacitor, .22UF/160V | C50B573-3 |
| R108 | Resistor, 330K | R12DC334J | C106 | Capacitor, .22UF/160V | C50B573-3 |
| R109 | Resistor, 220 | R12DC221J | C107 | Capacitor, .05UF/100V | C50B572-1 |
| R110 | Resistor, 220 | R12DC221J | C108 | Capacitor*, 25UF/70V | C50483-13 |
| R111 | Resistor, 330K | R12DC334J | C109 | Capacitor*, 100UF/15V | C50483-5 |
| R112 | Resistor, 2.2M | R33DC225J | C110 | Capacitor*, 25UF/35V | C50483-12 |
| R113 | Resistor, 8.2K | R12DC822J | Q101 | Transistor | A1380 |
| R114 | Resistor, 180K | R12DC184J | Q102 | Transistor | 2N2614 |
| R115 | Resistor, 270K | R12DC274J | Q103 | Transistor | A1380 |
| R116 | Resistor, 220K | R12DC224J | Q104 | Transistor | 2N2614 |
| R117 | Resistor, 18K | R12DC183J | — | Transistor Spacer | E50A624 |
| R118 | Resistor, 1.2K | R12DC122J | — | Printed Circuit Board | PB1095B110 |

*Electrolytic Capacitor

COMPONENT CONNECTION



PARTS DESCRIPTION LIST

CAPACITORS

10% Tolerance for all fixed capacitors unless otherwise noted or marked GMV (Guaranteed minimum value). All capacitors not marked uF on the schematic are pF (uuf).

| Symbol | Description | Part No. |
|---------|----------------------------|-----------|
| C1, 2 | 100, N1500, 1000V | C50070-6 |
| C3, 4 | Electrolytic, 50 uF, 35V | C50483-4 |
| C5 | Electrolytic, 200 uF, 35V | C50483-7 |
| C6 | Electrolytic, 50 uF, 35V | C50483-4 |
| C7 | Electrolytic, 1.0 uF, 50V | C50483-18 |
| C8, 9 | Ceramic, 270, 1000V | C50072-16 |
| C10, 11 | Electrolytic, 3000 uF, 40V | C50180-60 |
| C12 | Electrolytic, 200 uF, 35V | C50483-7 |
| C13 | Electrolytic, 50 uF, 35V | C50483-4 |
| C14 | Electrolytic, 1000 uF, 45V | C50180-69 |
| C15 | Electrolytic, 100 uF, 25V | C50483-6 |
| C16 | Molded, .01, uF 20%, 600V | C2747 |
| C17, 18 | 100, N1500, 1000V | C50070-6 |
| C19, 20 | 680, 1000V | C50072-2 |
| C21, 22 | Mylar, 0.33 uF, 160V | C50575-4 |
| C23, 24 | Electrolytic, 200 uF, 15V | C50483-13 |
| C25, 26 | Electrolytic, 1000 uF, 25V | C50483-14 |
| C27, 28 | Electrolytic, 100 uF, 25V | C50483-6 |
| C29, 30 | Electrolytic, 100 uF, 25V | C50483-6 |
| C31, 32 | 330, 1000V | C50072-1 |
| C33, 34 | 300, 1000V | C50072-39 |
| C35, 36 | 120, N1500, 1000V | C50070-9 |

RESISTORS & POTENTIOMETERS

Deposited carbon, in ohms, 5% tolerance, 1/8 watt, unless otherwise noted. K=Kilohms, M=Megohms.

| Symbol | Description | Part No. |
|-----------|--------------------------------------|------------|
| R1, 2 | 100K | R12DC104J |
| R3, 4 | 100K | R12DC104J |
| R5, 6 | 1K, 1/3W | R33DC102J |
| R7 | 220, 1/3W | R33DC221J |
| R8 | 1K | R12DC102J |
| R9, 10 | 47K | R12DC473J |
| R11 | 120K, 1/3W | R33DC124J |
| R12 | 1K | R12DC102J |
| R13 | 22K, 1/3W | R33DC223J |
| R14 | Wirewound, 470, 5% 2W | RW200W471J |
| R15 | Wirewound, 220, 5% 2W | RW200W221J |
| R16 | 1K | R12DC102J |
| R17, 18 | Potentiometer, 100K, Dual, Level Set | R50150-8 |
| R19 | 1K | R12DC102J |
| R20 | Wirewound, 270, 5% 2W | RW200W271J |
| R21 | 15K, 1/3W | R33DC153J |
| R22, 23 | 22K | R12DC223J |
| R24 | 12K, 1/3W | R33DC123J |
| R25 | 120K, 1/3W | R33DC124J |
| R26, 27 | 2.2K, 1/3W | R33DC222J |
| R28 | Wirewound, 1, 5%, 3W | RL300W010J |
| R29 | Composition, 820K, 10%, 1/2W | RC20BF824K |
| R30, 31 | 1M | R12DC105J |
| R32, 33 | 100K | R12DC104J |
| R34, 35 | 560K | R12DC564J |
| R36, 37 | 39K | R12DC393J |
| R38, A, B | Potentiometer, 100K, Dual, Treble | R30160-145 |
| R40 A, B | Potentiometer, 100K, Dual, Bass | R50160-145 |
| R42 A, B | Potentiometer, 50K, Dual, Balance | R50160-158 |
| R44, 45 | 1.8K | R12DC182J |
| R46 A, B | Potentiometer, 50K, Dual, Volume | R50160-146 |
| R48, 49 | Wirewound, 150, 10%, 3W | RPG3W151K |
| R50, 51 | 150 | R12DC151J |
| R52, 53 | Wirewound, 270, 5%, 2W | RW200W271J |
| R54, 55 | Wirewound, 100, 5%, 2W | RW200W101J |
| R56, 57 | Wirewound, 220, 5%, 2W | RW200W221J |

| | | |
|-----------|--|--------------|
| R58, 59 | Control, W. W. 10, 20%, 2W (DC Zero & IM Distortion) | R50160-142-1 |
| R60, 61 | Wirewound, 100, 5%, 2W | RW200W101J |
| R62, 63 | Wirewound, 220, 5%, 2W | RW200W221J |
| R64, 65 | Control, W. W. 10, 20%, 2W (DC Zero & IM Distortion) | R50160-142-1 |
| R66, 67 | Wirewound, 270, 5%, 2W | RW200W271J |
| R68, 69 | Wirewound, 1, 5%, 3W | RL300W010J |
| R70, 71 | Wirewound, 1, 5%, 3W | RL300W010J |
| R72 A, B | Wirewound, 1.5 + 1.5, 10%, 10W, Dual | R50500-3 |
| R73, 74 | Wirewound, 330, 5%, 2W | RW200W331J |
| R75, 76 | 3.9K | R12DC392J |
| R77, 78 | Wirewound, 220, 5%, 2W | RW200W221J |
| R79, 80 | 8.2K | R12DC822J |
| R81, A, B | Wirewound, 4 & 5, 10%, 10W, Dual | R50500-4 |
| R82, 83 | Wirewound, 330, 5%, 2W | RW200W331J |
| R84, 85 | Wirewound, 330, 5%, 2W | RW200W331J |
| R86, 87 | Composition, 22, 10% 1/2W | RC20BF220K |
| R88, 89 | Composition, 22, 10% 1/2W | RC20BF220K |

SWITCHES

| Symbol | Description | Part No. |
|--------|-----------------------------------|-------------|
| PS1 | Switch, Pushbutton, Input | S949-140 |
| S2 | Switch, Mode Selector | S949-137 |
| S3 | Switch, Low Level Selector | S949-138 |
| S4 | Switch, Speaker Selector | S949-139 |
| S5 | Switch, Power (on Volume Control) | Part of R46 |
| - | Switch, Rocker (Tan) | S50200-10 |
| - | Switch, Rocker (Maroon) | S50200-15-1 |
| - | Switch, Slide (Impedance Select.) | S50200-2 |

TRANSFORMERS AND TRANSISTORS

| Symbol | Description | Part No. |
|-------------|------------------------------------|------------|
| T1 | Transformer, Driver Left Channel | T949-116-1 |
| T2 | Transformer, Driver, Right Channel | T949-116-2 |
| T3 | Transformer, Power | T949-115 |
| Q1, 3, 5, 7 | Transistor 35144 | TR35144 |
| Q2, 4, 6, 8 | Transistor 35524 | TR35524 |
| Q9, 10 | Transistor 2N2148 | TR2N2148 |
| Q11, 13 | Transistor 2N2614 | TR2N2614 |
| Q12 | Transistor 40022 | TR4022 |

MISCELLANEOUS

| Symbol | Description | Part No. |
|--------------|--|--------------|
| CR1, 2, 3, 4 | Silicon Rectifier | SR50517 |
| CR5 | Selenium Rectifier | SR50597-1 |
| F1 | Fuse, 2.5 Amp Slo-Blo | F1077-118 |
| F2, 3, 4, 5 | Fuse, 2 Amp | F755-145 |
| I1, 2, 3, 4 | Input Indicator Lamp | I50594 |
| I5 | Power Indicator Lamp | I50009-6 |
| P1, 2 | Printed Circuit, Equalization | PC50187-14 |
| PC3, 4 | Printed Circuit, Tone | PC50489 |
| | Printed Circuit Board, Pre-Amp | P1240 |
| | Printed Circuit Board, Audio | P1096 |
| | Insert, Dress Panel, Screened (Lower) (For Tan Rocker Switches) | AS949-121 |
| | Insert, Dress Panel, Screened (Lower) (For Maroon Rocker Switches) | AS949-121-EX |
| | Knob, Mode, Low Level, Speakers, Balance | E50562-1 |
| | Knob, Dual, Top, Tone Control | E50563 |
| | Knob, Dual, Bottom, Tone Control | E50564 |
| | Knob, Volume | E50566-1 |
| | Barrier Strip, Speakers | E50596 |
| | Screws, For Cage & Bottom Cover | H50598-7 |
| | Insulator, Transistor Socket | E50510 |
| | Jack, Phone, Tape | J50545 |
| | Transistor, Socket | X50509 |

P 1096 PARTS DESCRIPTION LIST

| Symbol | Description | Part No. | Symbol | Description | Part No. |
|--------|-----------------------|------------|--------|-----------------------|------------|
| R201 | Resistor, 270K | R12DC274J | R227 | Resistor, 6.8K, 1/2 W | RC20BF682K |
| R202 | Resistor, 6.8K | R12DC682J | C201 | Capacitor, .22UF | C50B575-2 |
| R203 | Resistor, 330K | R12DC334J | C202 | Capacitor, 2 | C50B568-1 |
| R204 | Resistor, 180K | R12DC184J | C203 | Capacitor, .5UF/70V | C50483-11 |
| R205 | Resistor, 10K | R12DC103J | C204 | Capacitor*, 4UF/25V | C50483-1 |
| R206 | Resistor, 560K | R12DC564J | C205 | Capacitor*, 4UF/25V | C50483-1 |
| R207 | Resistor, 180 | R12DC181J | C206 | Capacitor, .039UF | C50B575-4 |
| R208 | Resistor, 47K | R12DC473J | C207 | Capacitor*, 50UF/10V | C50483-15 |
| R209 | Resistor, 33K | R12DC333J | C208 | Capacitor*, 4UF/25V | C50483-1 |
| R210 | Resistor, 3.9K | R12DC392J | C209 | Capacitor*, 4UF/25V | C50483-1 |
| R211 | Resistor, 47K | R12DC473J | C210 | Capacitor*, 4UF/25V | C50483-1 |
| R212 | Resistor, 2.7K | R12DC272J | C211 | Capacitor, 82 | C50B568-2 |
| R213 | Resistor, 100K | R12DC104J | C212 | Capacitor*, 4UF/25V | C50483-1 |
| R214 | Resistor, 3.9K | R12DC392J | C213 | Capacitor, 500UF/10V | C50483-9 |
| R215 | Resistor, 27K | R12DC273J | C214 | Capacitor, .5UF/70V | C50483-11 |
| R216 | Resistor, 2.2K | R12DC222J | C215 | Capacitor*, 4UF/35V | C50483-1 |
| R217 | Resistor, 68K | R12DC683J | Q201 | Transistor | 2N2613 |
| R218 | Resistor, 22K | R12DC223J | Q202 | Transistor | 2N2614 |
| R219 | Resistor, 5.6K | R12DC562J | Q203 | Transistor | 2N2613 |
| R220 | Resistor, 1.5K | R12DC152J | Q204 | Transistor | 2N2614 |
| R221 | Resistor, 100K | R12DC154J | Q205 | Transistor | 2N2614 |
| R222 | Resistor, 220K | R12DC224J | Q206 | Transistor | 2N2614 |
| R223 | Resistor, 1K | R12DC102J | Q207 | Transistor | 2N2614 |
| R224 | Resistor, 15K | R12DC153J | — | Printed Circuit Board | PB1096-110 |
| R225 | Resistor, 8.2K, 1/2 W | RC20BF822J | — | Transistor Spacer | E50A624 |
| R226 | Resistor, 100 | R12DC101J | | | |

* Electrolytic type

